

Having thus described a preferred embodiment(s) of invention, what is claimed is:

1. A vacuum cleaner motor housing comprising:  
an outer wall defining a motor housing cavity with  
an open end and a closed end; and  
a motor/fan assembly positioned within the cavity,  
5 the motor/fan assembly including a motor having an output  
shaft, a fan casing secured to the motor and having an inlet  
aperture, and an impeller rotatably secured to the motor  
output shaft within the fan casing, wherein the motor is  
positioned proximate the cavity closed end, the fan casing is  
10 positioned proximate the cavity open end, and the motor  
output shaft extends parallel to a central longitudinal axis  
of an associated vacuum cleaner upper assembly.
2. The motor housing of claim 1, wherein an  
airflow pathway extends in a first direction from the fan  
casing inlet through the motor/fan assembly and into the  
cavity closed end, and then in a second direction opposite to  
5 the first direction from the cavity closed end through an  
annular passageway around the motor/fan assembly and through  
the cavity open end.
3. The motor housing of claim 1, wherein the  
outer wall includes a plurality of trunions that pivotally  
mount the motor housing to an associated vacuum cleaner  
nozzle base.

4. A vacuum cleaner comprising:

a separation chamber that facilitates the separation of debris from a suction airstream;

an exhaust filter housing including a central  
5 suction duct, an exhaust filter, and an exhaust plenum defined between the central suction duct and the exhaust plenum; and

a motor housing including a motor/fan assembly positioned therein;

10 wherein an airflow pathway extends i) in a first direction from said separation chamber through said central suction duct and said motor/fan assembly and into the motor housing, ii) in a second direction opposite to the first direction through an annular passageway surrounding the  
15 motor/fan assembly and into the exhaust plenum, and iii) in a third direction transverse to the first and second directions through said exhaust filter.

5. The vacuum cleaner of claim 4, further including a primary filter assembly removably mounted within said separation chamber.

6. The vacuum cleaner of claim 4, wherein the separation chamber, exhaust filter housing, and motor housing are associated with a vacuum cleaner upper assembly, and the motor housing is pivotally secured to a vacuum cleaner nozzle  
5 base.

7. The vacuum cleaner of claim 6, wherein the separation chamber is defined within a dirt cup that is removable from the upper assembly.

8. A vacuum cleaner comprising:

a cyclonic airflow chamber that facilitates the separation of contaminants from a suction airstream, said airflow chamber including a chamber inlet and a chamber  
5 outlet, said chamber inlet being fluidically connected with at least one of a suction nozzle and an above-the-floor cleaning tool;

an exhaust filter housing including a suction duct and an exhaust plenum, said suction duct communicating with  
10 said chamber outlet;

a suction source housing including an open end communicating with said exhaust plenum and a closed end; and  
a suction source positioned within said suction source housing to define an annular exhaust flow passageway  
15 surrounding said suction source from said housing closed end to said housing open end, said suction source including a suction inlet communicating with said suction duct and an exhaust outlet communicating with said housing closed end.

9. The vacuum cleaner of claim 8, further including a primary filter assembly mounted in said cyclonic airflow chamber upstream from said suction source for filtering contaminants from said suction airstream.

10. The vacuum cleaner of claim 9, wherein said primary filter assembly includes a filter element with a polytetrafluoroethylene (PTFE) filter medium.

11. The vacuum cleaner of claim 8, wherein said chamber inlet includes a diverter that directs said suction airstream along a tangential course within said chamber.

12. The vacuum cleaner of claim 11, wherein said diverter is associated with a lid that is removable from said chamber.

13. The vacuum cleaner of claim 8, wherein said chamber inlet communicates with said suction nozzle, and a second chamber inlet spaced from said first-mentioned chamber inlet communicates with said above-the-floor cleaning tool;

14. The vacuum cleaner claim 8, further comprising an exhaust filter positioned within said exhaust filter housing, said exhaust filter being positioned radially outward of said exhaust plenum whereby exhaust air passes  
5 radially outward through said exhaust filter from said exhaust plenum.

15. The vacuum cleaner of claim 14, wherein said exhaust filter comprises a high efficiency particulate arrest (HEPA) filter medium.

16. The vacuum cleaner of claim 14, wherein the cyclonic airflow chamber, exhaust filter housing, and suction source housing are associated with a vacuum cleaner upper assembly, and the suction source housing is pivotally secured  
5 to a nozzle base.

17. The vacuum cleaner of claim 16, wherein said chamber outlet, said suction duct, and said suction inlet are axially positioned along a central longitudinal axis of the upper assembly.

18. The vacuum cleaner of claim 8, further including a bleed air port communicating with said suction duct.

19. The vacuum cleaner of claim 8, wherein said cyclonic airflow chamber is defined by a dirt cup that retains debris separated from said suction airstream, said dirt cup being removable from the exhaust filter housing.

20. The vacuum cleaner of claim 19, further including a primary filter assembly centrally mounted within said dirt cup, said cyclonic airflow chamber being defined between said dirt cup and said primary filter assembly.